Individual Investor Voice and Firm Value: Evidence from a Quasi-Natural Experiment

Yongxin Xu
Monash Business School
Monash University

Zili Zhuang
CUHK Business School
The Chinese University of Hong Kong

Abstract: After the Shanghai Stock Exchange mandated listed firms to respond to individual investor voice through an online platform, firm value as measured by Tobin's Q declines by about 11% for treatment firms compared to matched control firms. The value decrease is likely driven by low innovation efficiency and low-quality mergers and acquisitions, as opposed to deteriorating operating performance. This is corroborated by the finding that firm value drops more when individual investor voice is related to firm business strategy (e.g., new products, innovation, and investment). Finally, this negative value effect is concentrated in firms attracting more investor attention, whereas Tobin's Q is affected less or unaffected for firms likely benefiting more from the countervailing effect of increased transparency stemming from interacting with investors. Our study suggests that regulations (aggressively) promoting individual investor voice may bring unintended adverse consequences.

***Keywords*:** Individual Investor Voice; Firm Value; Shareholder Activism; Investor Relations

We thank Xuefeng Rong and Xiaoyue Song for their research assistance. We appreciate comments and suggestions from Wei Jiang, Rodrigo Verdi, and seminar participants at Southwestern Univesity of Finance and Economics. Zhuang acknowledges the financial support from the Research Grants Council of Hong Konh SAR (Porject Number 14503619).

1. Introduction

The corporate scandals of the early 2000's and the 2008 financial crisis underscore the importance of providing more monitoring rights to shareholders (Bernard 2010). While institutional investors can play a governance role (e.g., Brav, Jiang, Partnoy, and Thomas 2008; McCahery, Sautner, and Starks 2016), the lack of individual investor voice, or retail shareholder participation, remains a long-standing corporate governance problem of public firms that concerns the regulators (SEC 2015). As it is very costly for individual investors to collectively engage in shareholder activism,[1] an intriguing question is what would happen if regulations reduce the costs of shareholder engagement (Harris and Raviv 2010). Put differently, if the costs for individual investors to engage in voice are so low that they can, to some extent, have a "say on everything", will firm value increase? We investigate this important question using data collected from an online platform established by the Shanghai Stock Exchange in China that facilitates individual investor voice.

On July 5th, 2013, the Shanghai Stock Exchange launched an online platform named *SHANGZHENG E HUDONG* (which literally translates as Shanghai Stock Exchange e-interactions, EHD hereafter) at http://sns.sseinfo.com. The Shanghai Stock Exchange mandates that all firms listed on the exchange use EHD to engage with investors. This online platform provides a venue for individual investors, who otherwise have no access to firm management, to

[1] In theory, small investors can submit proposals for the company to include in the annual proxy statement for voting. But the eligibility requirement to submit a shareholder proposal can be prohibitively high. For instance, under the Financial Choice Act passed by the US House of Representatives, a shareholder cannot submit a proposal unless he/she owns at least one percent of the company's shares. The SEC amended its own Rule 14a-8 in 2020 with steep ownership and duration hurdles that prevent most retail shareholders from filing proposals, for example, one year continuous ownership for $25,000 or more. In China, the rule is that an investor has to own, solely or collectively, at least three percent of the company's shares to be able to submit a shareholder proposal (http://www.csrc.gov.cn/pub/tianjin/tjfzyd/tjjflfg/tjbmgz/201409/t20140922_260721.htm). Given the ownership requirement and the high cost of coordination among investors to get three percent of shares collectively, individual investors generally do not intervene with shareholder proposals in China.

directly interact with the firm at virtually no costs to the investor. The stated primary objective of the platform is for investors to provide advices and suggestions directly to the listed firm.[2] On the platform, investors can post messages to the listed firm on just about anything, for example, what activities they want the firm to be involved in, what aspects of the firm they are concerned about, or what information they need the firm to clarify.[3]

While not exactly a typical form of activism such as shareholder proposals or proxy contests, the public and direct investor-firm interactions in this setting can be viewed as a strong and broad type of individual investor voice. To the extent that all the platform contents are publicly available online, firms are under the spotlight and thus have to treat investor posts very seriously. Firm management is also obligated to respond to messages posted by investors on a timely basis.[4] If the stock exchange receives investor complaints that the firm does not respond to investors in time, it will make enquires to the firm. Furthermore, the timeliness of firm responses is part of the disclosure evaluation that the stock exchange takes into account when regulating mergers and acquisitions and financing activities of listed firms.[5]

There has been some evidence that regulations that increase investor voice, in particular, the say-on-pay laws, increase firm valuation (e.g., Correa and Lel 2016). This broadly implies that individual investor voice helps improve investor scrutiny on managers, mitigate agency problems, and thus increase firm value. Additionally, by committing to interacting with individual investors online openly, the firm may increase transparency and enjoys higher

[2] Details of this e-platform is introduced in Section 2. We use the terms "online platform", "investor/online interactions platform", "the platform", "interactive platform" or "EHD" interchangeably in the paper to refer to the realization of direct investor-firm interactions.
[3] If a particular piece of information that investors ask about has not been publicly disclosed, firms must not provide that information via EHD.
[4] Thus, it is different from online investor forums that facilitate communications *among* investors, such as Yahoo Finance Message Board or Stocktwits.
[5] http://www.sse.com.cn/aboutus/mediacenter/hotandd/c/c_20150912_3988854.shtml

liquidity, which can lead to an increase in firm value (e.g., Fang, Noe, and Tice, 2009; Lang, Lins, and Maffett 2012). In a recent paper, Lee and Zhong (2021) document that firm liquidity increases with the launch the interactive platforms in China, because the platforms presumably reduce investors' information processing costs and information asymmetry. Moreover, firms that interact with investors online are also perceived as more trustworthy (Elliott, Grant, and Hodge 2018), which in turn increases firm value through boosting social capital (e.g., Guiso, Sapienza, Zingales 2008; Lins, Servaes, and Tamayo 2017).

However, there are also strong arguments that individual investor voice could decrease firm value. The ability to directly interact with firm management facilitates interventions by individual investors, most of whom are unsophisticated and less informed. Firms need to devote time and resources to handling investor suggestions and opinions. Therefore, maintaining an active presence on the platform can cause distractions and divert managerial attention away from running the firm. More importantly, meddling with strategic and operating decisions by retail investors jeopardizes managerial autonomy and reduces firm value (e.g., Boot, Gopalan, and Thakor 2008). Investor voice becomes loud and clear through the direct investor-firm interactions on the platform, which exerts pressure on managers to take the course of actions that unsophisticated investors deem optimal. Investing resources in projects based on the preference of poorly informed investors is often not value increasing (Boot et al. 2008; Dasgupta and Noe 2019).[6] Specifically, being unsophisticated and misinformed, retail investors tend to pressure managers to chase market hotspots based on the buzzwords in the media, regardless of whether the firm has any competitive advantage or expertise in them. While jumping on the bandwagon

[6] Companies often use dual-class shares, whereby insiders hold shares with significantly more voting rights to fend off intervention by outside investors (e.g., Google, Facebook, and Alibaba). While controversial, dual-class structures are consistent with allowing founders/managers to think long term rather than be at the mercy of short-term investors.

may boost the stock price temporarily, it will lead to a reduction in firm value eventually.

A recent example illustrates the dynamics of how individual investor voice affects a firm.[7] Around January 2019, industrial hemp (a type of marijuana for industrial utilization) became a market hotspot in China with a lot of discussions in the media and online forums.[8] In the wake of such a hype, investors made suggestions on EHD to Yueyang Forest & Paper Co., a paper product manufacturer in Hunan Province, to consider planting marijuana in company-owned forests. On March 28 2019, investors said on EHD that many companies were planting hemp, a promising area of profits and growth, and suggested that Yueyang Forest and Paper do that too. Yueyang Forest & Paper responded on EHD that they would actively look into it. Following investors' suggestion, the firm indeed took actions including discussing project feasibility with the local government, even though the management admitted on EHD that it was highly uncertain whether this investment would succeed due to its lack of experience and expertise in hemp production.[9] In April, investors followed up on EHD with 17 posts inquiring Yueyang Forest and Paper about the progress of the industrial hemp project, and the company replied saying that it had already started a small trial plantation of industrial hemp. The stock price of the company reached CNY (Chinese Yuan) 19.51 in April, which was 20% higher than the closing price of CNY16.24 on March 27th (i.e., the day before investor voice, the pre-voice price). The stock price dropped quickly in May, closing at CNY14.41 on May 31st. The stock was traded at CNY13.51 by the end of 2019, about 17% lower than the pre-voice price.[10] The

[7] Lee and Zhong (2021) classify most of the investor posts as questions and only 16.6% as pure comments and suggestions. However, as can be seen from the investor post examples in Appendix A1, it is not uncommon for individual investors to embed suggestions and concerns in questions, i.e., questions in form but opinions and suggestions in substance. For example, "Will the firm consider the O2O model in its retail sales business?" As such, posts containing comments and suggestions are much more than 16.6%.
[8] http://finance.sina.com.cn/stock/hyyj/2019-03-28/doc-ihsxncvh6251891.shtml (in Chinese).
[9] https://finance.sina.com.cn/roll/2019-04-16/doc-ihvhiewr6323561.shtml (in Chinese).
[10] During the same period, the CSI 300 Index of the Chinese stock market increased by 9.4%, while the value-weighted industry return for the paper product manufacturer industry is -4.7%.

stock price decline after the initial rise is not surprising as Yueyang Forest and Paper showed little sign of success in planting marijuana in company-owned forests by the end of 2019.

In sum, while the positive liquidity effect is conducive to higher firm value, intervention by poorly informed retail investors can have a detrimental effect on the firm at the same time. To the best of our knowledge, there is little direct evidence on whether broadly elevating the voice of individual investors adds or destroys firm value. Our study intends to inform this important issue.

There are two identification challenges in testing the effect of individual investor voice on firm value. First, a firm's decision to accommodate investor voice is generally endogenous.[11] Therefore, any association between individual investor voice and firm value is likely to be driven by unobserved factors. Second, while contents on corporate social media accounts, such as Twitter and Facebook, can be interactive in nature, they are not suitable proxies for investor voice. Even if firms were mandated to set up a social media account, mitigating the endogeneity concern, managers could choose to ignore investor posts and not interact with investors there. This effectively makes the account an empty shell that does not effectively capture individual investor voice.

Our setting overcomes both empirical challenges. First, EHD was set up by the stock exchange to promote direct interactions between listed companies and individual investors. All firms listed on the Shanghai Stock Exchange are required to use this platform.[12] Thus, the establishment of online investor-firm interactions can be viewed as exogenous to the firm.

[11] Jung, Naughton, Tahoun, and Wang (2018) find that firms are less likely to use Twitter to disseminate earnings announcements when earnings news is bad. While Twitter is very different from our investor interaction platform, Jung et al. (2108) suggest that firms strategically choose whether and when to use social media platforms that facilitate potential interactions with investors.

[12] http://www.sse.com.cn/lawandrules/sserules/listing/stock/c/c_20150912_3985864.shtml (in Chinese).

Second, the firm is required to respond to suggestions and inquiries made by investors. These interactive online conversations (i.e., the posts by the investors and the response posts by firms) are publicly available on the internet. Firms not actively engaging in online interactions are subject to regulatory sanctions. An important difference between EHD and corporate social media is that on EHD it is the investors who initiate a conversation with the firm by making suggestions and asking questions to the firm and the firm then responds, whereas on the social media platform (e.g., Twitter) it is the firm that posts what it wants to post, and it can choose to ignore any comments made by others below its original post. Therefore, EHD resembles a scenario where individual investors can have a say on anything about the firm, and the firm is on the receiving end with an obligation to respond to investors. As such, EHD more accurately measures real-time individual investor voice.

We use a difference-in-differences design to gauge the impact of individual investor voice on firm value. Before the launch of EHD, some companies listed on the Shanghai Stock Exchange had already used a private online platform called Investor Relations Interactive Platform (IRIP hereafter) to interact with their investors directly. The IRIP is similar to EHD in that investors post suggestions and questions and listed companies respond to investor posts. Therefore, if a Shanghai Stock Exchange-listed firm had already used IRIP before 2013, i.e., an IRIP firm, then it had already been accommodating investor voice before the launch of EHD. These IRIP firms are like "voluntary adopters" of an investor voice platform and they serve as candidates for the control group. We define treatment firms as the ones listed in Shanghai Stock Exchange that do not have an account on IRIP before the launch of EHD. We use propensity score matching to ensure treatment and control firms are comparable in observable firm-level characteristics, such as firm size, age, analyst following, and the number of shareholders.

While both stock exchanges in China, Shanghai and Shenzhen, launched their respective interaction platforms, we use the Shanghai Stock Exchange platform in our main test because it is easier to find an appropriate control group.[13] Additionally, the Shenzhen Stock Exchange concurrently made substantive regulatory changes when it launches its investor interactive platform in 2010.[14] This likely plays into any findings using firms listed on the Shenzhen Stock Exchange as the control group, and for that matter, as the treatment group. Nonetheless, we conduct additional tests and find that our inference holds under alternative research designs, including (1) using Shenzhen listed firms as the control group and (2) staggered difference-in-differences analysis.

We find that firm value, measured by Tobin's Q, for treated firms decrease by about 11% relative to matched control firms after the launch of EHD. This result is consistent with that individual investor voice, facilitated by the launch of the interactive platform, destroys firm value. This may be why before the mandate EHD platform, only 26% of firms listed on the Shanghai Stock Exchange voluntarily interact with their investors via IRIP. Our dynamic analysis validates the parallel trend assumption and shows that the effect of individual investor voice concentrates in the years after the launch of EHD, strengthening causal inference. We obtain similar results when using the unmatched full sample or an entropy-balanced sample (Hainmueller and Xu 2013; Jacob, Michaely, and Muller 2019).

We next examine the possible channels through which individual investor voice can have

[13] No firms listed at the Shenzhen Stock Excahnge used IRIP, i.e., there are no "voluntary adopters" that can serve as control firms if the Shenzhen-listed firms are treatment firms. The firms listed in Shanghai and Shenzhen exchanges are quite different: the former are usually large firms in traditional industries and the latter are usually smaller technology firms (e.g., Carpenter, Lu, and Whitelaw, 2021). Firms on the two exchanges are thus lack of similarity and are not the appropriate control group for each other.

[14] For example, Shenzhen Stock Exchange revised its trading rule in 2011. The new trading rule has 137 clauses, which deleted 10 clauses and added 25 clauses compared to the previous trading rule.
http://www.szse.cn/disclosure/notice/t20110118_500654.html

such a substantial value-decreasing effect. This is a challenging task because many specific actions and policy changes taking place inside the company in response to specific investor advices are not observable. We observe that investors on EHD question companies on various fronts and make all kinds of suggestions, many of which are about actions firms should take such as developing new products or markets, innovation and investment, which we denote with the general term "business strategy". These are broadly in line with prior research documenting that investors and social media are concerned about operating efficiency (e.g., Brav, Jiang, and Kim 2015), innovation (He and Tian 2013; Lin, Liu, and Manso 2021), and merger and acquisitions (Gantchev, Sevilir, and Shivdasani 2020; Ang, Hsu, Tang, and Wu 2021). We thus focus on these three broad aspects of corporate policies and outcomes that are obviously linked to firm value. We begin with whether investor voice affects near-term performance and operating efficiency measured by return on assets, profit margin, asset turnover, and total factor productivity. We do not find that operating performance of treatment firm changes relative to that of control firms in the post-EDH period. Interventions in (i.e., suggestions on) operating activities require specialized and technical knowledge on the internal business process, much of which involves proprietary information inside the firm. Thus, retail investors are unable to give detailed suggestions relating to operating activities and it is easier for firms to fend off such suggestions on technical grounds. Instead, as our earlier discussions suggest, investor intervention likely involves changing firm activities such as investing in new projects, products, or markets. These often require R&D and/or M&A for the company to gain a firm foothold in the unfamiliar territories. While we find no significant change of treatment firms' R&D expenditures in the post-EHD period, treatment firms have fewer patents, and notably fewer invention patents, which are genuinely innovative in nature (e.g., Tan, Tian, Zhang, and Zhao, 2020). These results

are suggestive that investors pressure firms to change the way they innovate by chasing market hotspots and innovating in areas that are not optimal for firms to compete in (for example, a paper company tries to innovate and compete in industrial hemp), which results in lower innovation productivity. For M&As, we do not find any significant change in the incidences or the dollar amount of M&As by the treatment firms in the post-EHD period. However, treatment firms with the M&As done in the post-EHD period underperform control firms by 19% in the two years after the merger. All these are consistent with firms taking inefficient innovation and M&A activities that destroy firm value.

Finally, we conduct cross-sectional tests to further understand how individual investor voice affects firm value. We start with whether the effect of individual investor voice varies with the characteristics of posts by investors on the EHD. We find that firms with more intense interactions with investors (i.e., more posts and replies, and longer posts and replies) do not experience larger reduction in firm value. One explanation is that these firms also benefit from the interactions more, as shown by Lee and Zhong (2021) that the number and the length of posts and replies are positively associated with stock liquidity. We do find, however, the reduction in firm value are concentrated in treatment firms whose investor posts are related to broadly-defined business strategies, such as posts containing the keywords of investment, project, and product. This is consistent with the view that shareholder value is destroyed when ill-informed investors intervene in firm strategies or operations, as illustrated in the Yueyang Forest and Paper example earlier.

Media and analyst coverage attracts investor attention and helps investors to subsequently form their own views about the firm (Peng and Xiong 2006). We find that the negative effect of investor voice concentrates in treatment firms that have high pre-EHD media

coverage and analyst following. This suggests that media and analyst coverage elicit investor attention and thus voice to the covered firms. Alternatively, media and analyst coverage can play a monitoring and information role. Thus, firms with high media or analyst coverage are more transparent and benefit less from the liquidity improvement brought by the EHD. This means that the detrimental effect of investor intervention outweighs the liquidity benefit of investor communication for those firms. We explore this further by investigating the cross-sectional differences in the effect of investor voice and find that the negative effect of investor voice concentrates in firms with higher executive pay-performance sensitivity, higher board independence, or non-state owned enterprises, which presumably benefit relatively less from the transparency and liquidity effect.

This study makes two important contributions to the literature. First, we provide new insights on shareholder activism. While an extensive literature shows that shareholder activism by institutional investors enhances firm value (e.g., Smith 1996; Carleton, Nelson, Weisbach 1998; Gillan and Starks 2000; Brav, Jiang, Partnoy, and Thomas 2008; Becht, Franks, Mayer, and Rossi 2009; Fos and Tsoutsoura 2014; McCahery, Sautner, and Starks 2016), we know little about shareholder activism by individual investors. In our setting, individual investors engage in shareholder activism by directly voicing their opinions to the firm pressuring for changes. As such, we provide evidence on activism, or a type of "say on everything", by individual investors. Bethel, Liebeskind, and Opler (1998) and Klein and Zur (2009) document that wealthy and presumably sophisticated individual investors can increase firm value through improving corporate governance. In contrast, we show that firm value decreases as a result of activism by unsophisticated small investors who are more representative of typical retail shareholders.

Second, our study suggests that shareholder intervention in management decisions can

destroy firm value, broadly consistent with the view that public ownership, and to some extent "excessive" investor protection, can be both a blessing and a curse (Boot et al. 2008). There is ample research documenting that investor monitoring plays a disciplining role in curbing value-decreasing activities by management. Our evidence shows that heavy-handed regulations such as mandating firms to engage with individual investors indiscriminately, as in our setting, is not necessarily in the best interest of shareholders ultimately. While academics, practitioners, and regulators all recognize the importance of protecting the rights of small investors and having their voices heard (SEC 2015), we caution that investor protection regulations can have unintended consequences. In particular, our study suggests that investor voice can be counter-productive if managers are not insulated from undue investor pressure and intervention. It highlights the importance of understanding the tradeoff between investor protection and managerial autonomy in decision making, and informs the broader debate of shareholder democracy (e.g., Dagupta and Noe 2019; Gantchev and Giannetti 2021).

2. Institutional background and sample

2.1. Institutional background

Unlike institutional investors, individual investors rarely have the opportunity to directly communicate with listed companies to voice their opinions and engage in corporate governance. It is against this backdrop that the Shanghai Stock Exchange launched the online interactive platform, EHD, on July 5th, 2013 and mandate that all companies listed on the exchange use the platform to directly interact with investors.

The way that EHD works is as follows.[15] An individual can register an EHD account

[15] http://www.sse.com.cn/lawandrules/sserules/listing/stock/c/c_20150912_3985864.shtml provides detailed descriptions and rule of the EHD (in Chinese).

online using a valid email address or cellphone number. Through this online platform, registered users can (1) post messages on the platform to provide suggestions and ask questions to listed companies, (2) read the responses to their suggestions and questions by the listed company, and (3) browse the posts by other registered users and the corresponding corporate responses. All these conversations (i.e., posts) are permanently available online to the public. In other words, anyone who is not registered with EHD can also search and browse the posts by registered users and the responses to those posts from the companies. Individual users are responsible for the authenticity, legality, and accuracy of the contents that they post on EHD.

Investor questions reflecting their confusion about the meaning or calculation of a certain financial item are typically easy for the firm to respond. Lee and Zhong (2021) document that a significant portion, about 17%, of the posts made by investors are pure comments and suggestions to management. These can directly pressure firms to take real actions. In Appendix A1, we provide examples of investor suggestions and comments. We note that investor suggestions are often embedded in questions, i.e., a post looks like a question, but is a suggestion in substance. As such, investor suggestion and comments are more than the 17% that are explicitly "without a question mark". For instance, in Example 2 of Appendix A1, investors of the liquor company Hebei Hengshui Laobaigan (stock code 600559) asked why its competitor in the same province had high sales growth that year. This question asks for an explanation but implicitly pressures or suggests the firm to grow sales. The company's response to the question reflects its nature as a suggestion/pressure, instead of a clarification question: "We will intensity the adjustment of our product structure and promote our brand to achieve better development."

Each company listed on the Shanghai Stock Exchange is assigned an EKEY by the exchange for the company to use to log in to EHD. The major requirements for listed companies

include (1) The listed company is required to assign designated corporate staff responsible for regularly examining the suggestions made and questions raised to the company by investors on EHD as well as responding to those on a timely basis; (2) The listed company should pay close attention to relevant posts by investors, place great importance on information communicated by investors and strengthen direct interactive communications with investors; (3) Any response provided by the listed company should be accurate, complete, fair, and does not violate disclosure regulations. Specifically, for suggestions, questions, or responses related to information that has already been publicly disclosed, the listed company is required to provide necessary clarifications or elaborations. For those related to material information that has not been publicly disclosed previously, the listed company must not use the EHD platform to disclose such information. Instead, the listed company should direct investors to upcoming announcements made on official disclosure channels, such as Shanghai Securities News, China Securities Journal, and Securities Times. In other words, the company cannot use EHD as a substitute for regular disclosures. Companies disclosing non-public information on EHD are also subject to regulatory sanctions.

The Shanghai Stock Exchange monitors the frequency and quality of company responses to investors on EHD, which in turn affects the exchange's evaluation of a company's disclosures.[16] The disclosure evaluation is important to the listed company because the exchange takes into consideration the evaluation in its regulatory decision making, such as the approval of a seasoned equity offering or a merger and acquisition by a listed company.[17] Therefore, listed companies treat investor posts on EHD very seriously.

Table 1 presents some basic descriptive statistics of the EHD platform from the third

[16] https://www.sohu.com/a/290789539_683892 (in Chinese).
[17] http://www.csrc.gov.cn/pub/zhejiang/xxfw/zjgzjx/201310/t20131031_237209.htm (in Chinese).

quarter of 2013 when the platform was launched to the end of 2019, for the 1497 non-financial firms listed in the Shanghai Stock Exchange. On average, a firm receives 222 investor posts in the period, translating into about 23 posts per year. The mean of company response rate to investor posts is 78%. On average, an investor post contains about 56 words, and a company response contains about 79 words.

[Insert Table 1 here]

The launch of the EHD platform is not without controversy. The stock exchange and financial market regulators tout it as an innovative endeavor to protect shareholder interest, especially the interest of individual investors.[18] Managers of listed companies, however, express concerns that the platform causes distractions and disruptions detrimental to normal business operations. A listed company often has to deal with investor posts centered on contemporary hot issues and buzzwords with little or no relevance to the company, and late or simple responses provided by the company could result in investors filing complaints with the stock exchange.[19]

The other stock exchange in China, the Shenzhen Stock Exchange (SZSE), launched a similar investor interactions platform (http://irm.cninfo.com.cn/szse) in 2010. We use the Shanghai Stock Exchange platform, EHD, instead of the SZSE platform in our main analysis because we are not able to find a plausible control group for the SZSE firms. Specifically, no firms listed on the SZSE use the IRIP platform before 2010, whereas some firms listed in the Shanghai Stock Exchange started to use the IRIP platform before 2013, the EHD launch year. As discussed earlier, we do not use SZSE firms in our main tests, but we do use them in additional tests as a robustness check to our main results.

[18] http://www.sse.com.cn/aboutus/mediacenter/hotandd/c/c_20150912_3988691.shtml (in Chinese).
[19] http://finance.sina.com.cn/roll/2019-07-16/doc-ihytcitm2493942.shtml (in Chinese).

2.2. Sample

The sample consists of firms listed in the Shanghai Stock Exchange and the sample period is 2010 to 2018. We exclude observations in the year 2013 when the EHD platform was launched in July because about half of 2013 is the pre-EHD period and the other half post-EHD period. Our results remain the same if we keep the observations in 2013. To facilitate analysis relating to the contents of the investor posts, we obtain the EHD data in machine readable format from Datago Technology Limited. We exclude firms that are cross-listed in Hong Kong as they are subject to different regulatory environments. We also exclude firms in the financial services industry and firms with the "special treatment" designation.[20] Financial and accounting data are obtained from the China Stock Market & Accounting Research (CSMAR) database. We obtain media coverage data from the CNRDS database. Patent data are obtained from CSMAR, and supplemented with CNRDS data for missing values. M&A information is from the WIND database. For the main analysis, the final maximum sample has 5,518 firm-year observations, though the sample size drops in some analyses due to missing values of some of the variables used.

3. Main empirical analysis

3.1. Research Design

We define firms listed in the Shanghai Stock Exchange that did not have an account on the Investor Relations Interactive Platform (IRIP) as treatment firms. In other words, treatment firms did not have online interactions with investors until the launch of EHD. Sample firms that

[20] Regulators in China require that the two stock exchanges put stocks in danger of being delisted due to financial distress in a "special treatment" or "ST" category. The company (i.e., the ST firm) needs to place a special designation by placing "ST" in front of the company abbreviation (i.e., ticker symbol) to be differentiated from other stocks. A ST firm will be delisted unless it can remove the ST prefix through improved financial performance.

had already been using IRIP before July 5th, 2013 are our potential control firms. To the extent that control firms have online interactions with investors via IRIP before the launch of EHD, the introduction (i.e., "mandatory adoption") of the EHD platform does not constitute a treatment for these firms.[21]

We measure firm value with Tobin's Q, defined as the ratio of a firm's market capitalization over the book value of assets (e.g., Morck, Shleifer, and Vishny 1988; Gompers, Ishii, and Metrick 2003; Bebchuk, Cohen, and Ferrell 2009). The following is the main regression.

$$Tobin's\ Q_{i,t} = \beta_0 + \beta_1 Treat * After + \beta_2 Size_{i,t} + \beta_3 Age_{i,t} + \beta_4 Leverage_{i,t} + \beta_5 ROA_{i,t} + FirmFE + Location * YearFE + \varepsilon_{i,t} \quad (1)$$

Treat takes the value of one if the firm is a treatment firm, and zero if it is a control firm. *After* equals one for years 2014 to 2018, and zero for years 2010 to 2012. The key variable of interest is the interaction term *Treat*After*, whose coefficient is the difference-in-differences estimate. Following Gompers et al. (2003) and Bebchuk et al. (2009), we control for firm size (*Size*) measured by total assets, firm age (*Age*), leverage (*Leverage*), and return on assets (*ROA*). We include firm fixed effects (*FirmFE*) to account for time-invariant firm-specific heterogeneity correlated with firm value. We also control for unobserved time-varying and geography-varying factors that could affect firm value with location-year fixed effects (*Location*YearFE*), where *Location* is an indicator variable of the province where the firm is headquartered.

Arguably, firms that voluntarily initiated online interactions with investors on IRIP may be different from those that did not start investor interactions until the EHD launch. Therefore,

[21] For the control firms, interactions between listed firms and investors mostly moved from IRIP to EHD after the EHD launch, as the EHD is the official platform that is regularly monitored by the stock exchange.

we use propensity score matching to find control firms among all the firms that used IRIP.[22] Specifically, inspired by prior studies on firms' use of social media to interact with investors (e.g., Blankespoor, Miller, and White 2014), we estimate the probability of using IRIP with the following covariates (i.e., *IRIP*=1, note that we predict control firms): *Size*, *Age*, *Leverage*, *ROA*, *Analyst* (analyst following), *NumShareholders* (number of shareholders), *Media* (media coverage), *CAPEX* (capital expenditure), *Intangibility* (the ratio of intangible assets to total assets), *R&D* (research and development expense), *BM* (book to market ratio), *IO* (institutional ownership), *SOE* (state-owned enterprise), *IndDir* (proportion of indepdent directors), and industry effects. The matching is done using the 2012 data (i.e., the year before the EHD launch). We conduct the nearest-neighbor propensity score matching without replacement.

Detailed definitions of all variables used in the analyses are provided in the Appendix A2. The propensity score matching regression and tests of covariate balance are reported in Appendix A3. The logistic regression result is reported in Panel A. Large firms, firms with low leverage, and non-SOEs are more likely to open an account on IRIP. Panel B shows that the IRIP firms tend to have low analyst and media coverage, and low institutional ownership, among other things. As reported in Panel C, we achieve covariate balance with the post-matching data. While all the subsequent analyses are based on the propensity matched sample, our main result on Tobin's Q is robust to using the full sample or entropy balanced sample within the difference-in-differences framework. Finally, to mitigate the undue influences of outliers, all continuous variables are winsorized at the 0.5^{th} and 99.5^{th} percentiles. In all regressions, standard errors are two-way clustered by firm and by location-year.

[22] In additional test, we also try using firms listed in the Shenzhen Stock Exchange as control firms. As discussed in Section 2, these firms are mostly high tech growth firms as opposed to bigger mature firms in Shanghai Stock Exchange, thus are not necessarily an ideal control group. However, obtaining consistent result using both control groups (i.e., IRIP firms or SZSE firms) increases our confidence of our inference.

Table 2 presents descriptive statistics. The mean value Tobin's Q is 1.944 with a standard deviation of 1.319. Posts by investors on EHD have an average length of about 57 words per post. In terms of content, about half of investors' posts are related to business strategy.[23]

[Insert Table 2 here]

3.2. The effect of individual investor voice on firm value

Table 3 reports the main results using the propensity score matched sample. In the first column without control variables, the coefficient on the interaction term *Treat*After* is -0.219 and it is statistically significant at the 5% level. The coefficient estimate remains statistically significant and barely changes its magnitude (-0.217) once we add the control variables in the second column. This indicates that relative to control firms, the launch of EHD reduces firm value for treatment firms. The mean value of Tobin's Q in our sample is 1.944 as reported in Table 2. Therefore, the magnitude of the coefficient estimate represents a roughly 11% reduction in Tobin's Q as a result of firms' directly interacting with investors online. This is consistent with such interactions reflect investor intervention or voice that ultimately reduces firm value.

[Insert Table 3 here]

3.3. Dynamic effects of individual investor voice

Table 4 reports the result when we interact *Treat* with multiple year indicators: two years before, and one year before the EHD launch ($After^{-2}$, and $After^{-1}$, indicating 2011 and 2010), one year after, two years after, and three or more years after the EHD launch ($After^{1}$, $After^{2}$, and

[23] Note that *Number of posts*, *Length of posts*, *Number of responses*, *Length of responses*, and *Business strategy* are calculated for each firm within each year (e.g., 30 posts for firm A in 2015; on average 60 words per post for firm A in 2015; 50% of investor posts for firm A are related to business strategy in 2015), and then averaged across firm-years.

After^{3+}, indicating 2014, 2015, and 2016-2018). The year 2010 is the base year. The coefficient estimates for *Treat*After*$^{-2}$ and *Treat*After*$^{-1}$ are statistically insignificant. This validates the parallel trend assumption between treatment firms and control firms. The coefficient on *Treat*After*^{1} is statistically insignificant and those on *Treat*After*^{2} and *Treat*After*$^{3+}$, are negative and significant. This result implies that the drop in firm value starts two years after the launch of the online investor-firm interaction platform.

[Insert Table 4 here]

Figure 1 plots the regression coefficients over the years of 2011 to 2016 or later. It suggests that Tobin's Q of treatment firms and control firms follows a parallel trend before 2014, corroborating the result reported in Table 4.

[Insert Figure 1 here]

3.4. Robustness tests

3.4.1. Using full sample and entropy balanced sample

The main results presented in Table 3 are based on the propensity score matched sample. Alternatively, we run the difference-in-differences analysis using the unmatched full sample and the entropy balanced sample. The entropy balancing achieves covariate balance (of the first, second, and third moments) between treatment firms and control firms by reweighting observations (Hainmueller and Xu 2013; Jacob, Michaely, and Muller 2019). The results are presented in Panel A of Table 5. The coefficient estimate on *Treat*After* is -0.168 using the full sample and -0.141 using the entropy balanced sample and both are statistically significant. While the magnitude of the coefficient estimates is slightly smaller than that using the propensity score matching, the conclusion remains that firm value decreases after direct online interactions with

investors.[24]

3.4.2. Using firms listed in the Shenzhen Stock Exchange and Staggered DiD

Other alternative designs involve using SZSE firms, even though they are quite different from firms listed in the Shanghai Stock Exchange as discussed earlier. The first design uses SZSE firms as control firms. SZSE launched its investor interactions platform in 2010, the start of the pre-launch years of our main test, thus can serve as control firms for the Shanghai Stock Exchange firms who start online interactions with investors in 2013 via EHD. As reported in the first of column of Table 5 Panel B, the coefficient estimate of *Treat*After* is negative with a t-statistics equal to -1.83. This indicates that firm value decreases after EHD launch, relative to SZSE firms that are not affected by the launch of EHD.

The second design exploits the staggered launch of the investor interactions platform of the two exchanges in 2010 and 2013, respectively. In this staggered difference-in-differences design, the firms from the two exchanges serve as the control group for each other. As shown in the second column of Table 5 Panel B, the coefficient on *Treat*After* is negative and significant. This result indicates that firms experience a value decrease after the stock exchange launches its investor interactive platform, relative to firms listed in the other stock exchange.

[Insert Table 5 here]

4. Firm operating efficiency, innovation, and mergers and acquisitions

The online interactive communications platform lowers the cost of intervention by individual investor, who are typically poorly informed. We expect that interventions by ill-

[24] Note that there are 5,515, instead of 5,518 (as reported in Section 2.2), observations in the Full sample column of Table 5. The reason is we run firm fixed effects regressions and there are three singleton observations (i.e., a firm with only one year of data) that are dropped.

informed shareholders exert pressure on managers to make suboptimal decisions that decrease firm value. To the extent that we are generally not able to observe changes in managerial decisions at a granular level directly associated with investor posts, we treat the analysis in this section as exploratory and any evidence here as suggestive.

We start with short-term operating efficiency and performance, specifically, the effect of the EHD launch on firms' return on assets (*ROA*), profit margin (*ProfitMargin*), asset turnover (*AssetTurnover*), and total factor productivity (*TFP*) measured following Schoar (2002) with details provided in Appendix A2. Handling investor posts on the online platform can cause distractions that negatively affect managers' regular work of running the firm. Moreover, lower operating performance may stem from suboptimal operational decisions made by the firm under investor pressure.

We report the difference-in-differences analysis results on operating efficiency and performance in Panel A of Table 6. We do not detect any significant effect of the investor voice on ROA, profit margin, asset turnover, or TFP. These results suggest one or both of the following. First, the "distraction costs" are insignificant with no substantial impact on current operations of the firm. Second, as discussed earlier, making suggestions relating to operating efficiency requires proprietary and technical knowledge on internal business processes, something that individual investors are unlikely to possess. An investor post such as "the company should improve efficiency and profitability" is vague enough that the firm has a lot of room in responding to essentially ignore it. In contrast, it is much easier for an individual investor to suggest or pressure the company to enter the metaverse business as in Example 5 of Appendix A1 (or industry hemp as in the early example), which does not require detailed inside knowledge of the company or technology. In short, our evidence suggests that short-term operating

performance is not the driver of reduced firm value. Investor intervention likely forces firms to venture into new areas while keeping the routine business unaffected, at least in the short-run. We next investigate firms' innovation efficiency which is likely to have long-run implications for firm value.

Among a multitude of value-relevant strategic decisions and outcomes, we focus on innovation, not only because it is directly measurable, but more importantly for the following reasons. First, innovation is the most likely affected activity if investors pressure managers to chase market hotspots. Second, innovation involves specialized and often proprietary knowledge that corporate insiders possess, and thus innovation is an area where individual investors' opinions are highly likely to be ill-informed. Third, as detailed later, Appendix A4 shows that "product", "project", and "market" are high-frequency words that appeared in investor posts relating to overall business strategy. These high-frequency words appear often in the context of investors suggesting the firm to venture into a new product, a new line of business, or a new market or to make changes to its existing product/market mix. This is consistent with the view that investors tend to fixate on trendy topics such as electric vehicles and internet of things which often constitute risky new products or new markets for firms. Through investor voice, they push firms to change directions and enter those new sectors, which often require R&D and innovation.

We measure innovation input (i.e., R&D investment), *R&D*, as total research and development expenditures divided by total assets in a given year. There are three innovation output variables, *Patent*, measured as the natural logarithm of one plus the number of patents in a given year and are eventually granted (i.e., sucessfuly patent applications), *Invention*, measured as the natural logarithm of one plus the number of invention patents in a given year and are eventually granted, and *Non-Invention*, the natural logarithm of one plus the number of non-

invention patents (i.e., design patents and utility model patents) in a given year. We separately look at total patents and total invention patents because there are three types of patents in China: invention patents, utility models, and design patents. Invention patents represent true innovation whereas the other two types of patents reflect marginal increases in utility and better exterior design respectively (Tan, Tian, Zhang, and Zhao 2020).

[Insert Table 6 here]

The difference-in-differences analysis results are reported in Panel B of Table 6. In the first column, we find no significant change in firm R&D expenditures as the coefficient estimate on *Treat*After* is statistically insignificant. We do, however, find significant declines in total patents and inventions applied and granted in the second and third column respectively, with both dropping by about 20% for treatment firms after launch of EHD. In contrast, the coefficient estimate on *Treat*After* in column 4 is not significant, implying that individual investor voice does not change the production of less innovative patents. Collectively, we find that while firms do not change R&D expenditures, more importantly, innovation output and innovation quality decrease substantially. While we do not directly observe the reason behind the decline in innovation efficiency, one possibility could be that firms strive to innovate in a new market or a new sector in which the firm has inadequate expertise or resources to compete. Consequently, the firm is not able to generate enough inventions, and the patents granted to the firm tend to be frivolous ones that are not very valuable. This could be one channel why individual investor voice and interventions, proxied by direct investor-firm interactions, reduces firm value. Example 1 in Appendix A1 illustrates how investors make comments and suggestions to management relating to innovation. Specifically, the investor post asked Shanghai Jahwa United (stock code 600315) whether the firm would improve innovation with

practices such as “Amoeba Operating”. “Disguised” as questions, this investor post expressed investor dissatisfaction with firm R&D and innovation and made suggesions on how to do innovation better.

Finally, we investigate whether low quality M&As is a channel that investor voice reduces firm value. Similar to the discussion above motivating the innovation channel, investors tend to push firms to venture into new products or markets relating to trendy buzzwords and one important way to get into these new territories is through acquisitions. We use three measures relating to M&As: the number of M&As, *NDeal*, measured as the natural logarithm of the number of M&As done by a firm in a year; M&A deal size, *DealSize*, measured as the natural logarithm of total monetary amount of the transaction (in Chinese Yuan) for a firm in a year; and *M&A Performance*, measured as the market-adjusted return over the 24 month period after the M&A announcement.

The M&A results are presented in Panel C of Table 6. The first column shows that treatment firms do not engage in a higher number of M&As in the post-EHD period, relative to control firms. The second column indicates that there was no statistically significant change in deal size in the post-EHD period.[25] These results indicate that investors do not pressure firms to do more M&As. The analyses presented in the third column are done at the deal level. The difference-in-differences result presented in the third column indicates that treatment firms’ return underperforms by 27% in the 24 months after the M&A in the post-EHD period. Taken together, we find evidence that while the number and magnitude of M&As do not change under investor pressure, the quality of M&As significantly worsened. This is consistent with investors

[25] Note that DealSize regression is run at the firm year level. Firm-years with no M&A is dropped from the analysis and thus it has a smaller sampler size. If a firm has more than one M&As in a given year, then the deal size is the sum of all the M&As in that year.

pushing firms to do inefficient expansions to generate growth and profits. In other words, even though firms do not make more or less M&As, the ones that they do make are more value-destroying, for example poor target selection, possibly because of the excessive influence exerted by poorly informed and yet vocal individual investors. This is illustrated by Example 3 in Appendix A1 where the investor post suggested Meihua Holdings Group (stock code 600873) to acquire two specific targets, and such acquisitions involve "opportunities outside our main business" judged by the company's response. While we do not have definitive evidence, it is possible that the M&A to expansion into other business may destroy firm value in the long run.

Collectively, the analyses in this section suggest that investor voice can have real effects on firm activities, in particular the innovation and M&A decisions, and consequently firm value decreases.

5. Cross-sectional tests

We conduct multiple cross-sectional analyses to shed more light on how individual investor voice affects firm value.

5.1. Investor voice intensity and content

We look at whether the effect of investor voice varies with its characteristics. In particular, we look at the number of investor posts, measured as the natural logarithm of one plus the number of investor posts in a firm-year (*Number of Posts*), the length of investor posts, measured by the average word count of all investor posts in a firm-year (*Length of Posts*), the number of investor posts, measured as the natural logarithm of one plus the number of firm replies in a firm-year (*Number of Responses*), the length of investor posts, measured by the average word count of all investor posts in a firm-year (*Length of Responses*), and the proportion of investor posts that are related to firm business strategy in a firm-year (*Business Strategy*). These measures

capture the intensity and content of investor voice.

We classify an investor post as related to broadly-defined business strategy if the post is about entry into or development of a new field/platform/project/market, investment, R&D and future growth, etc. The other issues in investor posts are mostly about disclosure, corporate governance, and public relations. The reason that we focus on investor voice on business strategy is because they are more directly related to key corporate decisions and activities and likely to have the greatest impact of future cash flows and firm value. If those decisions or activities, affected by investor voice, stray away from their original optimal courses, then firm value will decrease. We use the following procedure to classify whether a specific investor post is related business strategy. First, we read 1000 randomly selected investor posts and compile a list of key words relevant to what we call "business strategy", broadly defined to include operations, (new) products, (new) markets, investment, innovation, merger, plan and strategy, etc. The list, presented in Appendix A4, contains 48 Chinese words to be used as a dictionary to identify business strategy-related investor posts in the sample. Note that in many cases, a Chinese word can be both a noun and a verb. In other word a Chinese word in the list may correspond to two English words (e.g., "acquisition" and "acquire" in English correspond to one word in Chinese that is both a noun and a verb). Therefore, these 48 Chinese words correspond to more than 48 English words as many in the list do have a separate nuon and verb in English but not in Chinese. Another thing to note is that a post can have multiple contents. For instance, Example 1 in Appendix A1 talked about sales and expenses (i.e., operations) first and then switch R&D and innovation. Based on the 48 key words, we identify investor posts on business strategy.

The results are reported in Table 7. *Treat_high* and *Treat_low* are indicator variables corresponding to the five variables on investor voice intensity and content. For example, in the

first column, *Treat_high* is an indicator variable for treatment firms whose number of investor posts is above the sample median of all treatment firms, and *Treat_low* is an indicator variable for other treatment firms. We do find evidence that the reduction in Tobin's Q varies with the numbers of investor posts and firm replies or the length of investor posts and firm replies.

[Insert Table 7 here]

In the last column of Table 7, we compare the effect of EHD between firms that have a high fraction (i.e., above sample median, *Treat_high*) versus a low fraction (i.e., not above sample median, *Treat_low*) of investor voice concerning business strategy. We find that firms whose investor voice exhibits a high fraction of suggestions and advices on business strategy-related issues experience a more severe decrease in Tobin's Q than those with a low fraction of such posts from investors. The coefficient on *Treat_high*After* and *Treat_low*After* is -0.274 and -0.163 respectively, and the difference between the two is statistically significant. This suggests that investor voice decreases firm value when managers change the course of actions pressured by poorly-informed outside shareholders using EHD to evaluate and intervene in key decision-making.

5.2. Analyst following and media coverage

Information in the public domain, such as analyst and media reports, attracts investor attention and helps investors to subsequently form their own views about the firm (Peng and Xiong 2006). As analysts and media can "direct" investor attention to firms that they cover, such firms are more likely to be subject to investor voice and potential intervention. Correspondingly, we expect that firms with high analyst following or media coverage experience a larger reduction of Tobin's Q after they start to use EHD.

We report the analysis in Table 8. We separate our main variable of interest *Treat*After*

into *Treat_high*After* and *Treat_low*After*, where *Treat_high* is an indicator variable for treatment firms whose number of analyst following (media coverage) in 2012 is above the sample median, and *Treat_low* is an indicator variable for treatment firms whose number of analyst following (media coverage) is equal to or below the median, in the first (second) column. For both the analyst and media tests, we find that the coefficient on the interaction term *Treat_high*After* is negative and significant with a much larger magnitude and that on *Treat_low*After* is statistically insignificant. The difference between the two is statistically significant. Thus, the drop in Tobin's Q after the launch of EHD concentrates in treatment firms with high analyst following or high media coverage.

[Insert Table 8 here]

Alternatively, the results in Table 8 reflect that the investor intervention effect and the transparency effect countervail each other. Firms with more analyst following has better information environments (e.g., Frankel and Li 2004), and media coverage alleviates information frictions (Fang and Peress 2009). To the extent that firms with analyst following or media coverage are less opaque, ceteris paribus, they benefit less from the transparency enhancement effect of the EHD (Lee and Zhong 2021). As such, there is a weaker transparency and liquidity effect that increases firm value to countervail the investor intervention effect that decreases firm value. This also yields the prediction that that firms with high analyst following or media coverage experience a larger reduction of Tobin's Q after they start to use EHD. For analyst following, the coefficient on *Treat_high*After* is -0.330 and that on *Treat_low*After* is -0.100. Although these firms with low analyst following suffer investor intervention too, the intervention effect and liquidity effect offset each other yielding a statistically insignificant treatment effect. For firms with high analyst following the beneficial liquidity effect is not large enough to mute

the investor intervention effect. Similarly, firms with less media coverage also have a negative but statistically insignificant treatment effect, in contrast to the negative and statistically significant effect for firms with more media coverage. We explore how the two countervailing effects work on different firms further next.

5.3. Differential potential benefits from the investor communication platform

The EHD reduces investor information processing cost and information asymmetry for the firm (Lee and Zhong 2021), which are conducive to increases in firm value. Firms with agency problems as they are less transparent, have lower liquidity and lower value (Gompers, Ishii, and Metrick 2003; Chung, Elder, and Kim 2010; Armstrong, Balakrishnan, and Cohen 2012). As such, these firms potentially benefit more from the EHD than others, all else equal. By contrast, firms with lower agency problem likely experience a lower liquidity and transparency effect to countervail the detrimental effect of investor intervention. We look at three proxies for the potential benefits from the investor communication platform. First, executive pay-performance sensitivity (*PPS*), measured as the firm-specific coefficient estimate of regressing total senior executive cash compensation on annual return in a three-year window from 2010 to 2012.[26] Second, board independence (*IndDir*), as firms with lower board independence are less transparent (Armstrong, Core, and Guay 2014). Third, state-owned enterprises (*SOE*), as SOE firms have more agency problems and incentives to suppress bad news (Piotroski, Wong, and Zhang 2015; Jiang and Kim 2020). We separate our main variable of interest *Treat*After* into *Treat_high*After* and *Treat_low*After*, where *Treat_high* is an indicator variable for treatment firms whose *PPS* (*IndDir*) in 2012 is above the sample median,

[26] We use only cash compensation as equity compensation, and stock options in particular in China is often not genuine compensation (Chen, Guan, and Ke 2013). On average, the total senior executive cash compensation covers six executives per firm.

and *Treat_low* is an indicator variable for treatment firms whose *PPS* (*IndDir*) is equal to or below the median, in the first (second) column. In the third column, we use *Treat_SOE* and *Treat_Non-SOE* to proxy whether the treatment firm is a SOE.

The results are presented in Table 9. When we use *PPS* to measure agency problems, the coefficient on *Treat_high*After* is negative, significant and that on *Treat_low*After* is negative and insignificant, and the difference between the two is significant. When we use board independence (SOE) to measure agency problems, we find that the magnitude of the coefficient on *Treat_high*After* (*Treat_Non-SOE*) is larger than that for *Treat_low*After* (*Treat_SOE*), though the difference is not statistically significant. Overall, there is weak evidence suggesting that Tobin's Q drops more for firms with less severe agency problems, whereas the Tobin's Q for firms with more agency problems experience little or no change after the launch of the EHD. The results of better-governed firm being "penalized" by the EHD reflect the fact that these firms have better information environments and there is less benefit for them to reap stemming from the enhanced liquidity and monitoring by the EHD launch. On the other hand, direct communication with investor plays a more prominent positive role for more opaque firms that were poorly governed. This positive effect offsets the value-decreasing effect of investor intervention.

[Insert Table 9 here]

6. Conclusion

To facilitate investor voice and retail shareholder engagement in corporate governance, the Shanghai Stock Exchange launched an online interactive investor platform. All firms listed on the Shanghai Stock Exchange are required to respond online to suggestions made to the company by investors or questions asked by investors on the platform. Using this event as an

exogenous shock of individual investor voice, we find that firm value, measured by Tobin's Q, of treatment firms declines by about 11%, compared to the propensity score-matched control firms. The reduction exists in the years after, but not before, the launch of the platform, suggesting a causal relation. Our main result is robust to difference-in-differences analysis using the unmatched full sample, the entropy balanced sample, and other research designs. We also find that while short-term operating performance is unchanged after the platform launch, treated companies have lower innovation efficiency and engage in low-quality mergers and acquisitions, both of which are likely channels for the value decrease.

Content analysis of investor posts on the platform shows that firm value drops more when individual investor voices focus on business strategy. This is broadly consistent with investor intervention forces managers to make suboptimal strategic decisions in innovation and investment. Moreover, the negative effect of direct investor-firm interactions is stronger for firms with more analyst following or media coverage, as analysts and media increase investor attention on the firm and provide "contexts" or "leads" for investors to voice their opinions and questions. Last, treatment firms with more severe agency problems and opacity experience less decrease in Tobin's Q, as they benefit from the liquidity effect, offsetting the investor intervention effect, of the investor interaction platform.

Our evidence suggests that protecting individual investors by facilitating their scrutiny on firms and letting them have a voice seems to be value-decreasing. The pressure brought by intensive daily online interactions between firms and investors could push key business decisions to be heavily influenced by the less-informed outside shareholders, when informed managers should be insulated when making such decisions. This is detrimental to shareholder value in the long run. Our study highlights the importance of understanding the tradeoff between investor

protection and managerial autonomy in running companies, and particularly cautions the use of one-size-fits-all type of regulations catering to individual investor voice.

References

Ang, J., C. Hsu, D. Tang, and C. Wu. 2021. The role of social media in corporate governance. *The Accounting Review* 96:1-32.

Armstrong, C. S., K. Balakrishnan, and D. Cohen. 2012. Corporate governance and the information environment: Evidence from state antitakeover laws. *Journal of Accounting and Economics* 53: 185-204.

Armstrong, C. S., J. E. Core, and W. R. Guay. 2014. Do independent directors cause improvements in firm transparency? *Journal of Financial Economics* 113: 383-403.

Bebchuk, L., A. Cohen, and A. Ferrell. 2003. What matters in corporate governance? *Review of Financial Studies* 22: 783-827.

Becht, M., J. Franks, C. Mayer, and S. Rossi. 2009. Returns to shareholder activism: Evidence from a clinical study of the Hermes UK Focus Fund. *Review of Financial Studies* 22: 3093-3129.

Bernard, T. S. 2010. Voting your shares may start to matter. *The New York Times*, March 5, 2010.

Bethel, J., J. Liebeskind, and T. Opler. 1998. Block share purchases and corporate performance. *Journal of Finance* 53: 605-634.

Blankespoor, E., G. S. Miller, and H. D. White. 2014. The role of dissemination in market liquidity: Evidence from firms' use of Twitter™. *The Accounting Review* 89: 79-112.

Brav, A., W. Jiang, F. Partnoy, R. Thomas. 2008. Hedge fund activism, corporate governance, and firm performance. *Journal of Finance* 63: 1729-1775.

Boot, A., R. Gopalan, and A. Thakor. 2008. Market liquidity, investor participation, and managerial autonomy: Why do firms go private? *Journal of Finance* 63: 2013-2059.

Callaway, B. and P. Sant'Anna. 2020. Difference-in-differences with multiple time periods. *Journal of Econometrics*.

Carleton, W., J. Nelson, and M. Weisbach. 1998. The influence of institutions on corporate governance through private negotiations: Evidence from TIAA-CREF. *Journal of Finance* 53: 1335-1362.

Carpenter, J. N., F. Lu, and R. F. Whitelaw. 2021. The real value of China's stock market. *Journal of Financial Economics* 139: 679-696.

Chen, Z., Y. Guan, and B. Ke. 2013. Are stock option grants to directors of state-controlled Chines firms listed in Hong Kong genuine compensation? *The Accounting Review* 88: 1547-1574.

Chung, K. H., J. Elder, and J. C. Kim. 2010. Corporate governance and liquidity. *Journal of Financial and Quantitative Analysis* 45: 265-291.

Correra, R. and U. Lel. 2016. Say on pay laws, executive compensation, pay slice, and firm valuation around the world. *Journal of Financial Economics* 122: 500-520.

Dasgupta, S. and T. Noe. 2019. Does pay activism pay off for shareholders? Shareholder democracy and its discontents. *Management Science* 65: 1810-1832.

Elliot, W. B., S. Grant, and F. D. Hodge. 2018. Negative news and investor trust: The role of firm and CEO Twitter use. *Journal of Accounting Research* 56: 1483-1519.

Fang, V. and J. Peress. 2009. Media coverage and the cross-section of stock returns. *Journal of Finance* 64: 2023-2052.

Fang, V. W., T. H. Noe, and S. Tice. 2009. Stock market liquidity and firm value. *Journal of Financial Economics* 94: 150-169.

Fos, V. and M. Tsoutsoura. 2014. Shareholder democracy in play: Career consequences of proxy contests. *Journal of Financial Economics* 114: 316-340.

Frankel, R. and X. Li. 2004. Characteristics of a firm's information environment and the information asymmetry between insiders and outsiders. *Journal of Accounting and Economics* 37: 229-259.

Gantchev N. and M. Giannetti. 2021. The costs and benefits of shareholder democracy: Gadflies and low-cost activism. *Review of Financial Studies*, forthcoming.

Gillan, S. and L. Starks. 2000. Corporate governance proposals and shareholder activism: The role of institutional investors. *Journal of Financial Economics* 57: 275-305.

Gompers, P., J. Ishii, and A. Metrick. 2003. Corporate governance and equity prices. *Quarterly Journal of Economics* 118: 107–155.

Gusio, L. P. Sapienza, and L. Zingales. 2008. Trusting the stock market. *Journal of Finance* 63: 2557-2600.

Hainmueller, J. and Y. Xu. 2013. ebalance: A Stata package for Entropy balancing. *Journal of Statistical Software* 54: 1-18.

Harris, M. and A. Raviv. 2010. Control of corporate decisions: Shareholders vs. management. *Review of Financial Studies* 23: 4115-4147.

Jacob, M., R. Michaely, and M. Muller 2019. Consumption taxes and corporate investment. *Review of Financial Studies* 32: 3144-3182.

Klein, A. and E. Zur. 2009. Entrepreneurial shareholder activism: Hedge funds and other private investors. *Journal of Finance* 64: 187-229.

Lee, C., and Q. Zhong. 2021 Shall we talk? The role of interactive investor platforms in corporate communication. *Journal of Accounting and Economics*, forthcoming.

Lins, K. H. Servaes, and A. Tamayo. 2017. Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis. *Journal of Finance* 72: 1785-1824.

Lang, M., K. Lins, and M. Maffet. 2012. Transparency, liquidity, and valuation: International evidence on when transparency matters most. *Journal of Accounting Research* 50: 729-774.

McCahery, J., Z. Sautner, and L. Starks. 2016. Behind the scenes: The corporate governance preference of institutional investors. *Journal of Finance* 71: 2905-2932.

Morck, R., A. Shleifer, and R. Vishny. 1988. Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics* 20, 293–315.

Peng L. and W. Xiong 2006. Investor attention, overconfidence and category learning. *Journal of Financial Economics* 80: 563-602.

Security and Exchange Commission. 2015. *SEC proxy voting roundtable*. February 19, 2015.

Smith, M. 1996. Shareholder activism by institutional investors: Evidence from CalPERS. *Journal of Finance* 51: 227-252.

Schoar, A. 2002. Effects of corporate diversification on productivity. *Journal of Finance* 57: 2379-2403.

Tan, Y., X. Tian, X. Zhang, and H. Zhao. 2020. The real effect of partial privatization on corporate innovation: Evidence from China's split share structure reform. *Journal of Corporate Finance* 64: 101661.

Appendix A1 Examples of investor posts and firm responses

Post by investor	**Response by the firm**
Example 1 To *Shanghai Jahwa United (stock code 600315)* Hi board secretary, the firm has a high expense-to-sales ratio of 54%. Its administrative expenses are 10.6% of sales, higher than the one of its peer (5.62%). The administrative expenses are declining but still high. Is the firm working on further reducing administrative expenses? Moreover, the R&D expenditures are lower than its peer. Will the firm consider taking special moves such as "RenDanHeYi (integrating employee with customer order)" and "Amoeba Operating" to groom innovation teams so that the firm can catch up with the trend of cosmetics as fast moving consumer goods?	Hi investor, thank you for your attention and suggestions! First, during the last 18 months, the firm has been restructuring the personnel, which has effectively reduced administrative expenses. In the future, the firm will continue to reduce the above costs by simplifying the process and focusing on operation efficiency. Secondly, the firm spends more than CNY 100 million annually on R&D expenditures to support brand innovation, including new products and new marketing strategies. After changing the innovation methods and process, we are positioned to use big data to test consumer experience in multiple dimensions including concept, packaging, formula, and pricing. We build a brand-asset system to evaluate and improve the return of investment.
Example 2 To *Hebei Hengshui Laobaigan Liquor (stock code 600559)* According to Guoxiang Guo, the manager of your peer, Congtai Liquor, in the same province, its sales in 2021 increased by 44% to CNY 1.4 billion. Why did your peer have such growth while you did not?	Hi, we will optimize our development strategy, actively adjust our products and promote our brand to achieve better performance.

Example 3 To *Meihua Holdings Group (stock code 600873)* Hi board secretary! Investors of Qianhe Condiment and Food asked on EHD platform whether Qianhe will acquire your company. I think your company can and should integrate the industrial chain by acquiring Qianhe or Eastroc Beverage. Is your firm planning on such acquisitions?	Thank you for your suggestion! We have been looking for such opportunities. In the next two to three years, we will enhance our main business and also seek opportunities outside our main business. Thank you for your attention!
Example 4 To *SAIC Motor (stock code 600104)* Internet of Things will be a dream come true in China and the rest of the world in the next few years. This is an opportunity for us to see the trend-turning changes taking place in China. We should have more tolerance for failures in innovative industries! People should stop talking about industries such as liquor, medicines, and photovoltaic cars! Recently BYD has been doing research about the Internet of Things. Will SAIC Motor also go into the Internet of Things?	Hi investor! Given the new trend of data determining customer experience and software defining cars, we have been accelerating our intelligent technology to build a new generation of electronic cars. We are working on a system with software, cloud computing, AI, big data, and cyber security. Our primary system covers an electronic control system, an SOA software platform, an intelligent car data factory, an AI algorithm chip design, and OTA and cyber security system.
Example 5 To *Wangfujing Group (stock code 600859)* Hi board secretary! I find that the firm had an SEO of CNY 700 million to be used in digital transformation. This is a big investment. Is the firm expecting to transform to the new consumption model of cloud fitting room, cloud shopping, digital	Thank you for your attention. As scheduled, the proceeds from this SOE will be used to update our sales platform, operation platform, data center, supporting platform, and ERP system. We will gradually build a digital information system that fits the new digital world.

human, and metaverse?	
Example 6 To *Wolong Electric Group (stock code 600580)* Hi board secretary! Does Wolong have enough cash flow? Can the firm reduce its leverage and divest non-core businesses with low profits? The macroeconomic environment is bad, and high leverage could be troublesome. Thank you.	Since 2018, the operating cash flow and free cash flow have been increasing a lot. We are also working on divesting non-core businesses.
Example 7 To *China Northern Rare Earth Group (stock code 600111)* Your company has a 30% market share for hydrogen storage material. What is the sales revenue from this business? What is its percentage in total revenue? China is pushing a carbon-neutral strategy, making hydrogen energy even more important. Does the company plan to increase the production capacity for hydrogen storage material?	In 2020, the Rare Earth Ovonic High-power MH-Ni Battery generated a revenue of more than CNY 10 million, contributing a small percentage to our total revenue. In 2017, we acquired Dabowen Co. in Sihui City, to enhance our ability to produce hydrogen storage material. We will consider further enhancing our production capacity when necessary. Thank you for your attention.
Example 8 To *Shanghai Newtouch Software (stock code 688590)* Does the firm have products related to digital currency and cryptocurrency?	Hi, thank you for your attention. We are actively researching on the cryptocurrency business. Currently, we help large financial institutions with software development and help corporate customers with issuance, digital payment and customer management in the digital realm. In the future, we will expand our technology and service to relevant fields such as cryptocurrency.

Example 9 To *China Molybdenum (stock code 603993)* Does the firm plan to expand its business into recycling metal? Will the firm participate in the new energy business?	Hi investor. Currently, we have not prepared to expand into the recycling metal business. But we are actively looking into the development of the use of metal in the field of new energy. Thank you for your attention.
Example 10 To *Wuxi Commercial Mansion Grand Orient (stock code 600327)* Will the firm consider the O2O model in its retail sales business?	We also notice that O2O is the future for the next generation of e-commerce, and it is also a current market hotspot. We are closely monitoring the development of the e-commerce models including the O2O model. We will conduct research on O2O's relationship with our current business and the feasibility of implementing O2O.

Appendix A2: Variable definition

Variable	Definition
Tobin'sQ$_t$	Market capitalization/ total assets in year t
Treat	Indicator variable that equals 1 if the firm is a treatment firm (i.e., the firm did not have an account on IRIP before July 5th, 2013) and 0 otherwise.
After	Indicator variable that equals 1 if the year is later than 2014 and 0 otherwise.
Size$_t$	Natural logarithm of (total assets) in year t
Age$_t$	Natural logarithm of (1+ listing time calculated by month) as of year t
Leverage$_t$	Total liabilities/ total assets in year t
ROA$_t$	Net income before Extraordinary items/ total assets in year t
SOE$_t$	Indicator variable that equals 1 if the firm is a state-owned enterprise and 0 otherwise in year t
NumShareholders$_t$	Natural logarithm of (number of shareholders) in year t
Capex$_t$	Capital expenses/ total assets in year t
BM$_t$	Book value of asset/ market value in year t
Analyst$_t$	Natural logarithm of (1+number of analyst following) in year t
Media$_t$	Natural logarithm of (1+number of media news articles covering the firm) in year t
IO$_t$	Institutional ownership in year t
IndDir	The proportion of independent directors
FCF	The net income plus depreciation minus cash paid to acquire fixed assets, intangible assets, and other long-term assets, scaled by total assets.
Number of Posts$_t$	Number of investor posts in year t
Length of Posts$_t$	The average number of words in an investor post in year t
Number of Responses$_t$	Number of firm replies in year t
Length of Responses$_t$	The average number of words in a reply to the investor post in year t
NDeal	Natural logarithm of (1+number of M&A in year t)
DealSize	Natural logarithm of total deal size in year t
M&A Performance	A firm's cumulative abnormal return over the 24 months after the announcement of a merger and acquisition minus the market return during the same period.
Business Strategy$_t$	The ratio of investor posts relating to firm business strategy in year t
ProfitMargin$_t$	The ratio of net income to sales in year t
AssetTurnover$_t$	The ratio of sales in year t to the average total assets at the beginning and end of year t
TFP$_t$	The firm's total factor productivity defined as in Schoar (2002). For all firms in an industry-year, we regress the natural logarithm of sales on the natural logarithm of total assets, the natural logarithm of the total number of employees, and the natural logarithm of cash payments for raw materials and service. The firm's TFP is computed as the residual of this regression.
R&D$_t$	Total research and development expenditures divided by total assets in year t
Patent$_{t+1}$	Natural logarithm of (1+number of total patents filed in year t+1 and finally granted)
Invention$_{t+1}$	Natural logarithm of (1+number of invention patents filed in year t+1 and finally granted)
Non-Invention$_{t+1}$	Natural logarithm of (1+number of non-invention patents filed in year t+1 and finally granted)
PPS	Pay-performance sensitivity, measured as the firm-specific coefficient estimate of regressing total senior executive cash compensation on annual return in a three-year window from 2010 to 2012

Appendix A3: Propensity score matching

This appendix reports the propensity score matching regression and the covariate balance tests. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for the two-tailed test.

Panel A: Propensity score regression

Dependent variable	IRIP
Size	0.403**
	(2.30)
Age	0.219
	(1.62)
Leverage	-1.439**
	(-2.01)
ROA	1.851
	(0.79)
Analyst	-0.037
	(-0.30)
NumShareholders	-0.008
	(-0.05)
Media	-0.081
	(-0.61)
Capex	0.877
	(0.41)
Intangibility	-0.202
	(-0.13)
R&D	-2.186
	(-0.28)
BM	-0.828
	(-1.26)
IO	0.008
	(0.66)
SOE	-0.492**
	(-2.35)
IndDir	-2.034
	(-1.19)
Industry FE	Yes
Observations	691
Pseudo R-squared	0.051

Panel B: Covariate balance tests (pre-matching)

Variable	Mean		Difference
	IRIP firms	Non-IRIP firms	
Size	22.330	22.387	-0.057
Age	4.775	4.785	-0.009
Leverage	0.533	0.499	0.034***
ROA	0.038	0.049	-0.011***
Analyst	1.689	1.864	-0.175***
NumShareholders	10.778	10.787	-0.009
Media	5.020	5.136	-0.115**
Capex	0.055	0.059	-0.003
Intangibility	0.047	0.047	0.000
R&D	0.004	0.004	-0.000
BM	0.628	0.584	0.043***
IO	7.198	9.181	-1.983***
SOE	0.729	0.613	0.116***
IndDir	0.369	0.366	0.003

Panel C: Covariate balance tests (post-matching)

Variable	Mean		Difference
	IRIP firms	Non-IRIP firms	
Size	22.423	22.415	0.009
Age	4.773	4.777	-0.004
Leverage	0.494	0.495	-0.000
ROA	0.051	0.051	0.000
Analyst	1.940	1.891	0.050
NumShareholders	10.802	10.790	0.012
Media	5.188	5.160	0.028
Capex	0.057	0.058	-0.001
Intangibility	0.045	0.047	-0.002
R&D	0.004	0.004	-0.000
BM	0.595	0.586	0.009
IO	8.839	9.372	-0.533
SOE	0.626	0.619	0.007
IndDir	0.364	0.365	-0.001

Appendix A4: Key words related to business strategy (original Chinese in parentheses)

Performance(业绩)	Technology(技术)	M&A(并购)
Market(市场)	R&D(研发)	Merger(合并)
Project(项目)	Research(研究)	Enter(进军)
Product(产品)	Innovation(创新)	Acquire(兼并)
Profit(利润)	Science and technology innovation(科创)	Merge/Integrate into(并入)
Production(生产)	Patent(专利)	Investment(投资)
Sales(销售)	Introduce(引进)	
Manage(经营)	Upgrade(升级)	Future(未来)
Price(价格)	Introduce(引入)	Strategy(战略)
Income(收入)	Create(创造)	Plan(规划)
Operation(营业)	New product(新产品)	Grand plan(宏图)
Capacity(产能)	Scientific research(科研)	
Costs(成本)	New technology(新技术)	
Gain(盈利)	Knowledge(知识)	
Gross profit(毛利)	Experience(经验)	
Main business line(主营)	Invention(发明)	
Sales volume (销量)	Replace(换代)	
Efficiency(效率)	Research and development(研究开发)	
Manufacture(制造)		
Sales price(售价)		

Figure 1 Difference-in-differences coefficients of dynamic effects

This figure plots the difference-in-differences regression coefficients for years 2011 (before2) to 2015 (after2) and 2016 or later. The vertical lines represent the 95% confidence intervals.

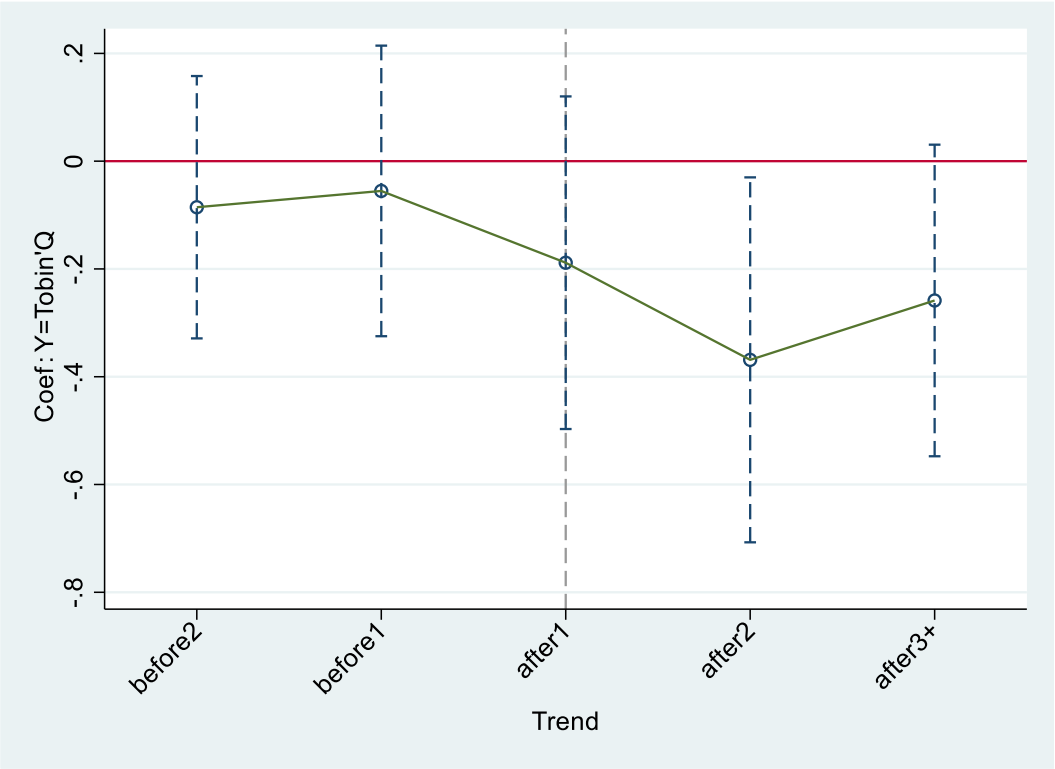

Table 1: Characteristics of investor posts on *EHD*

Variable	Mean	SD	P5	P25	Median	P75	P95
Number of Posts	222.542	223.406	31.000	87.000	156.000	278.000	653.000
Number of Responses	183.409	212.454	5.000	52.000	120.000	234.000	574.000
Response Rate	0.777	0.297	0.077	0.629	0.938	0.991	1.000
Length of Posts	55.678	11.063	39.307	48.299	54.632	62.342	74.666
Length of Responses	78.765	34.681	32.975	56.047	74.681	96.153	140.599

This table reports the statistics of investor posts and firm replies from 2013 Q3 to 2019 Q4 for all non-financial firms listed on the Shanghai Stock Exchange.

Table 2: Descriptive statistics

variable	mean	p50	p25	p75	sd	N
Tobin's Q	1.944	1.518	1.171	2.196	1.319	5518
Treat	0.739	1.000	0.000	1.000	0.439	5518
After	0.638	1.000	0.000	1.000	0.481	5518
Size	22.680	22.585	21.822	23.497	1.260	5518
Age	5.049	5.193	4.883	5.412	0.602	5518
Leverage	0.506	0.510	0.362	0.656	0.198	5518
ROA	0.035	0.031	0.012	0.057	0.052	5518
NumShareholders	10.802	10.777	10.242	11.310	0.819	5518
Analyst	1.534	1.609	0.693	2.485	1.154	5518
Capex	0.044	0.030	0.011	0.061	0.045	5515
Media	5.224	5.231	4.554	5.875	1.042	5510
IO	7.349	4.833	1.605	10.310	7.985	5518
BM	0.623	0.617	0.425	0.821	0.257	5518
SOE	0.668	1.000	0.000	1.000	0.471	5511
IndDir	0.371	0.333	0.333	0.400	0.054	5515
Intangibility	0.048	0.031	0.014	0.057	0.064	5500
R&D	0.009	0.001	0.000	0.014	0.014	5518
Number of posts	44.725	24.000	11.000	54.000	60.987	3522
Length of posts	56.893	55.943	45.273	67.902	17.964	3522
Number of replies	37.074	17.000	5.000	44.000	58.630	3522
Length of replies	64.625	61.641	36.400	88.261	44.856	3522
Business Strategy	0.485	0.500	0.375	0.602	0.182	3500
Patent	2.205	2.197	0.000	3.611	1.863	5518
Invention	1.070	0.693	0.000	1.792	1.368	5518
Non-Invention	1.970	1.792	0.000	3.332	1.807	5518
Invention_Ratio	0.246	0.143	0.000	0.375	0.293	3929
ProfitMargin	0.077	0.056	0.020	0.115	0.173	5516
AssetTurnover	0.696	0.570	0.345	0.889	0.521	5460
TFP	0.014	0.003	-0.157	0.170	0.314	5447
FCF	-0.008	0.000	-0.034	0.027	0.066	5451
NDeal	0.203	0.000	0.000	0.000	0.385	5518
DealSize	19.362	19.519	17.982	20.902	2.067	1272
M&A Performance	-0.005	-0.055	-0.282	0.241	0.422	1976
PPS	0.117	-0.021	-0.421	0.298	2.355	656

Table 3: The effect of individual shareholder voice on firm value

This table reports the results of the difference-in-differences regression to test the effect of individual shareholder voice on firm value. The dependent variable is Tobin's Q, measured by the market value of assets divided by the book value of assets. *Treat* is an indicator that equals one if a firm listed in the Shanghai Stock Exchange did not have an account on Investor Relations Interactive Platform (IRIP) before the launch of the official direct investor-firm interaction platform (EHD) by the Shanghai Stock Exchange in 2013. *After* is an indicator variable for the post-*EHD* launch period of 2014-2018. The definitions of the other variables are provided in Appendix A2. We use a propensity score matched sample based on Appendix A2. All of the regressions include firm and location*year fixed effects. The t-statistics reported in parentheses are based on standard errors clustered by both firm and location*year. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for the two-tailed test.

VARIABLES	Tobin's Q	Tobin's Q
*Treat*After*	-0.219**	-0.217**
	(-2.18)	(-2.48)
Size		-0.978***
		(-7.92)
Age		0.245***
		(3.58)
Leverage		1.013***
		(3.22)
ROA		3.079***
		(3.63)
Firm FE		Yes
Location*year FE		Yes
Observations	2,768	2,768
Adj. R-squared	0.607	0.687

Table 4: The dynamic effect of individual shareholder voice on firm value

This table reports the results of the difference-in-differences regression to test the effect of individual shareholder voice on firm value. The dependent variable is Tobin's Q, measured by the market value of assets divided by the book value of assets. *Treat* is an indicator that equals one if a firm listed in the Shanghai Stock Exchange did not have an account on Investor Relations Interactive Platform (IRIP) before the launch of the official direct investor-firm interaction platform (EHD) by the Shanghai Stock Exchange in 2013. $Afte^{-2}$, $After^{-1}$, $After^{1}$, $After^{2}$, and $After^{3+}$ are indicator variables that equal one for the second year before the launch of EHD (2011), one year before the launch of EHD (2012), the first year after the launch of EHD (2014), two years after the launch of EHD (2015), and three or more years after the launch of EHD (2016-2018). 2010 is the base year. All of the regressions include firm and location*year fixed effects. The t-statistics reported in parentheses are based on standard errors clustered by both firm and location*year. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for the two-tailed test.

VARIABLES	Tobin's Q
*Treat*After*$^{-2}$	-0.085
	(-0.69)
*Treat*After*$^{-1}$	-0.055
	(-0.40)
*Treat*After*^{1}	-0.188
	(-1.20)
*Treat*After*^{2}	-0.369**
	(-2.14)
*Treat*After*$^{3+}$	-0.258*
	(-1.76)
Size	-0.977***
	(-7.90)
Age	0.244***
	(3.55)
Leverage	1.013***
	(3.21)
ROA	3.078***
	(3.64)
Firm FE	Yes
Location*year FE	Yes
Observations	2,768
Adj. R-squared	0.687

Table 5: Difference-in-differences analysis with full sample and Entropy balanced sample

This table reports the results of difference-in-differences regressions with the full sample and Entropy balanced sample. Entropy balancing is done using the same set of variables used in propensity score matching. The dependent variable is Tobin's Q, measured by the market value of assets divided by the book value of assets. *Treat* is an indicator that equals one if a firm listed in the Shanghai Stock Exchange did not have an account on Investor Relations Interactive Platform (IRIP) before the launch of the official direct investor-firm interaction platform (EHD) by the Shanghai Stock Exchange in 2013. *After* is an indicator variable for the post-*EHD* launch period of 2014-2018.The definitions of the other variables are provided in Appendix A2. All of the regressions include firm and location*year fixed effects. The t-statistics reported in parentheses are based on standard errors clustered by both firm and location*year. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for the two-tailed test.

Panel A

	Full sample	Entropy balanced sample
VARIABLES	Tobin's Q	Tobin's Q
*Treat*After*	-0.168**	-0.141*
	(-2.20)	(-1.69)
Size	-0.884***	-0.828***
	(-9.83)	(-7.93)
Age	0.214***	0.249***
	(4.84)	(5.27)
Leverage	0.717***	0.611**
	(2.96)	(2.58)
ROA	2.065***	1.995***
	(3.75)	(3.16)
Firm FE	Yes	Yes
Location *year FE	Yes	Yes
Observations	5,515	5,274
Adj. R-squared	0.701	0.683

Panel B

VARIABLES	SZSE as Control (2010-2018) Tobin's Q	Staggered DiD (2007-2018) Tobin's Q
*Treat*After*	-0.139*	-0.121**
	(-1.83)	(-2.54)
Size	-1.221***	-1.125***
	(-13.10)	(-15.01)
Age	0.129*	0.111*
	(1.91)	(1.78)
Leverage	1.140***	1.055***
	(3.86)	(4.08)
ROA	1.678***	2.409***
	(3.55)	(5.92)
Firm FE	Yes	Yes
Location *year FE	Yes	Yes
Observations	8,666	11,747
Adj. R-squared	0.696	0.663

Table 6: The effect of individual investor voice on firm activities

This table reports the results of the difference-in-differences regressions to test the effect of individual shareholder voice on operating performance, innovation and M&A. In Panel A, the dependent variables are profit margin defined by the ratio of net income to sales (*ProfitMargin*), sales divided by average total assets at the beginning and end of the year (*AssetTurnover*), sales divided by average total assets at the beginning and end of the year (*InventoryTurnover*), and return on assets (*ROA*). In Panel B, the dependent variables are research and development expenditures divided by total assets (*R&D*), the natural logarithm of the number of all patents filed and finally granted (*Patent*), the natural logarithm of the number of invention patents filed and finally granted (*Invention*), and the natural logarithm of the number of non-invention patents filed and finally granted (*Non-Invention*). In Panel C, we use three measures relating to M&As: the number of M&As, *NDeal*, measured as the natural logarithm of the number of M&As done by a firm in a year; M&A deal size, *DealSize*, measured as the natural logarithm of total monetary amount of the transaction (in Chinese Yuan) for a firm in a year; future M&A performance, *M&A Performance*, measured as the market-adjusted return over the 24 month period after the M&A announcement. *Treat* is an indicator that equals one if a firm listed in the Shanghai Stock Exchange did not have an account on Investor Relations Interactive Platform (IRIP) before the launch of the official direct investor-firm interaction platform (EHD) by the Shanghai Stock Exchange in 2013. *After* is an indicator variable for the post-*EHD* launch period of 2014-2018. The definitions of the other variables are provided in Appendix A2. We use a propensity score matched sample based on Appendix A2. All of the regressions include firm and location*year fixed effects. The t-statistics reported in parentheses are based on standard errors clustered by both firm and location*year. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for the two-tailed test.

Panel A: Operating performance

VARIABLES	ROA_t	$ProfitMargin_t$	$AssetTurnover_t$	TFP_t
*Treat*After*	-0.002	0.002	-0.034	-0.010
	(-0.43)	(0.17)	(-1.17)	(-0.37)
Size	0.017***	0.063***	0.056*	-0.018
	(5.43)	(4.38)	(1.70)	(-0.82)
Age	0.005*	0.011	-0.012	-0.002
	(1.91)	(1.28)	(-0.25)	(-0.08)
Leverage	-0.158***	-0.441***	0.076	-0.186**
	(-8.21)	(-6.52)	(0.69)	(-2.07)
Firm FE	Yes	Yes	Yes	Yes
Location*year FE	Yes	Yes	Yes	Yes
Observations	2,768	2,768	2,741	2,739
Adj. R-squared	0.522	0.531	0.821	0.526

Panel B: Innovation

VARIABLES	$R\&D_t$	$Patent_{t+1}$	$Invention_{t+1}$	$Non\text{-}Invention_{t+1}$
*Treat*After*	-0.002	-0.211**	-0.202**	-0.118
	(-1.64)	(-2.07)	(-2.25)	(-1.21)
Size	-0.000	0.296***	0.163***	0.307***
	(-0.12)	(3.63)	(3.43)	(3.59)
Age	-0.001	0.143	0.013	0.136
	(-1.30)	(1.48)	(0.17)	(1.37)
Firm FE	Yes	Yes	Yes	Yes
Location*year FE	Yes	Yes	Yes	Yes
Observations	2,768	2,768	2,768	2,768
Adj. R-squared	0.670	0.820	0.733	0.807

Panel C: M&A

VARIABLES	*NDeal*	*DealSize*	*M&A Performance*
*Treat*After*	-0.025	-0.548	-0.276***
	(-0.78)	(-1.26)	(-2.75)
Size	0.145***	1.457***	-0.234***
	(6.21)	(4.40)	(-2.76)
Age	0.057	-0.549	-0.134
	(0.81)	(-1.20)	(-0.87)
Leverage	-0.027	0.712	0.729*
	(-0.31)	(0.55)	(1.82)
ROA	0.665**	7.854	-0.840
	(2.21)	(1.45)	(-0.48)
FCF	-0.079	-4.794	1.612
	(-0.33)	(-1.12)	(1.05)
Firm FE	Yes	Yes	Yes
Location*year FE	Yes	Yes	Yes
Observations	2,735	515	937
Adj. R-squared	0.172	0.271	0.430

Table 7: Voice characteristics and the effect of individual investor voice

This table reports the results of how the intensity and content of individual investor posts influences the effect of individual shareholder voice on firm value. The dependent variable is Tobin's Q, measured by the market value of assets divided by the book value of assets. Treatment firms are the ones that are listed in the Shanghai Stock Exchange but did not have an account on Investor Relations Interactive Platform (IRIP) before the launch of the official direct investor-firm interaction platform (EHD) by the Shanghai Stock Exchange in 2013. *After* is an indicator variable for the post-*EHD* launch period of 2014-2018. The definitions of the other variables are provided in Appendix A2. We use a propensity score matched sample based on Appendix A2. In the "Number of Posts" column, *Treat_high* (*Treat_low*) is an indicator variable that equals one for treatment firms whose number of investor posts is higher (lower) than the treatment firm median. In the "Length of Posts" column, *Treat_high* (*Treat_low*) is an indicator variable that equals one for treatment firms whose length of investor posts, defined as the average number of characters for each post, is higher (lower) than the treatment firm median. In the "Number of Responses" column, *Treat_high* (*Treat_low*) is an indicator variable that equals one for treatment firms whose number of replies to investor posts is higher (lower) than the sample median. In the "Length of Responses" column, *Treat_high* (*Treat_low*) is an indicator variable that equals one for treatment firms whose length of replies, defined as the average number of characters for each reply, is higher (lower) than the treatment median. In the "Business Strategy" column, *Treat_high* (*Treat_low*) is an indicator variable that equals one for treatment firms whose proportion of investor posts related to business strategy is higher (lower) than the treatment firm median. We use F tests to examine whether the coefficients of *Treat_high*After* and *Treat_low*After* differ. All of the regressions include firm and location*year fixed effects. The t-statistics reported in parentheses are based on standard errors clustered by both firm and location*year. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for the two-tailed test.

	Number of Posts	*Length of Posts*	*Number of Responses*	*Length of Responses*	*Business Strategy*
VARIABLES	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q
*Treat_high*After*	-0.188**	-0.228**	-0.265***	-0.210**	-0.274***
	(-2.01)	(-2.48)	(-2.90)	(-2.24)	(-2.94)
*Treat_low*After*	-0.243***	-0.205**	-0.172*	-0.224**	-0.163*
	(-2.66)	(-2.29)	(-1.79)	(-2.44)	(-1.79)
Size	-0.981***	-0.977***	-0.973***	-0.978***	-0.977***
	(-7.91)	(-7.89)	(-7.83)	(-7.92)	(-7.91)
Age	0.244***	0.246***	0.248***	0.244***	0.250***
	(3.58)	(3.59)	(3.66)	(3.57)	(3.68)
Leverage	1.019***	1.009***	1.001***	1.015***	1.016***
	(3.23)	(3.19)	(3.17)	(3.22)	(3.23)
ROA	3.072***	3.073***	3.091***	3.078***	3.099***
	(3.62)	(3.63)	(3.64)	(3.63)	(3.63)
F value	0.82	0.23	1.82	0.05	3.74
Prob>F	0.367	0.633	0.179	0.821	0.054
Firm FE	Yes	Yes	Yes	Yes	Yes
Location*year FE	Yes	Yes	Yes	Yes	Yes
Observations	2,768	2,768	2,768	2,768	2,768
Adj. R-squared	0.687	0.687	0.687	0.687	0.687

Table 8: Analyst and media coverage and the effect of individual investor voice

This table reports the results of examining how analyst and media coverage influences the effect of individual shareholder voice on firm value. The dependent variable is Tobin's Q, measured by the market value of assets divided by the book value of assets. Treatment firms are the ones that are listed in the Shanghai Stock Exchange but did not have an account on Investor Relations Interactive Platform (IRIP) before the launch of the official direct investor-firm interaction platform (EHD) by the Shanghai Stock Exchange in 2013. *After* is an indicator variable for the post-*EHD* launch period of 2014-2018. The definitions of the other variables are provided in Appendix A2. We use a propensity score matched sample based on Appendix A2. In the "Analyst" column, *Treat_high* (*Treat_low*) is an indicator that equals one for treatment firms in which the number of analysts is higher (lower) than the sample median. In the "Media" column, *Treat_high* (*Treat_low*) is an indicator that equals one for treatment firms in which the number of media reports is higher (lower) than the sample median. We use F tests to examine whether the coefficients of *Treat_high*After* and *Treat_low*After* differ. All of the regressions include firm and location*year fixed effects. The t-statistics reported in parentheses are based on standard errors clustered by both firm and location*year. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for the two-tailed test.

	Analyst	Media
VARIABLES	Tobin's Q	Tobin's Q
*Treat_high*After*	-0.330***	-0.402***
	(-3.25)	(-3.42)
*Treat_low*After*	-0.100	-0.032
	(-0.90)	(-0.32)
Size	-0.980***	-0.980***
	(-7.92)	(-7.92)
Age	0.257***	0.253***
	(3.76)	(3.59)
Leverage	1.029***	0.997***
	(3.27)	(3.18)
ROA	3.126***	3.142***
	(3.75)	(3.78)
F value	3.39	7.81
Prob>F	0.067	0.006
Firm FE	Yes	Yes
Location*year FE	Yes	Yes
Observations	2,768	2,768
Adj. R-squared	0.688	0.690

Table 9: Potential EHD benefits and the effect of individual investor voice

This table reports the results of examining how the effect of individual shareholders' voice on firm value varies with the potential benefits of such voice. The dependent variable is Tobin's Q, measured by the market value of assets divided by the book value of assets. Treatment firms are the ones that are listed in the Shanghai Stock Exchange but did not have an account on Investor Relations Interactive Platform (IRIP) before the launch of the official direct investor-firm interaction platform (EHD) by the Shanghai Stock Exchange in 2013. *After* is an indicator variable for the post-*EHD* launch period of 2014-2018. The definitions of the other variables are provided in Appendix A2. We use a propensity score matched sample based on Appendix A2. In the "PPS" column, *Treat_high* (*Treat_low*) is an indicator that equals one for treatment firms in which the pay-performance sensitivity is higher (lower) than the sample median. In the "IndDir" column, *Treat_high* (*Treat_low*) is an indicator that equals one for treatment firms in which the proportion of independent directors is higher (lower) than the sample median. In the "SOE" column, *Treat_SOE* (*Treat_Non-SOE*) is an indicator for treatment firms that are SOEs (Non-SOEs). We use F tests to examine whether the coefficients of *Treat_high*After* and *Treat_low*After* (*Treat_SOE*After* and *Treat_Non-SOE*After*) differ. All of the regressions include firm and location*year fixed effects. The t-statistics reported in parentheses are based on standard errors clustered by both firm and location*year. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively, for the two-tailed test.

	PPS	IndDir	SOE
VARIABLES	Tobin's Q	Tobin's Q	Tobin's Q
*Treat_high*After*	-0.334***	-0.250**	
	(-2.95)	(-2.22)	
*Treat_low*After*	-0.069	-0.196*	
	(-0.67)	(-1.91)	
*Treat_SOE*After*			-0.151
			(-1.53)
*Treat_Non-SOE*After*			-0.322**
			(-2.52)
Size	-0.975***	-0.980***	-0.971***
	(-7.87)	(-7.92)	(-7.89)
Age	0.286***	0.245***	0.271***
	(3.86)	(3.59)	(3.88)
Leverage	0.977***	1.026***	0.999***
	(3.06)	(3.21)	(3.17)
ROA	3.045***	3.085***	3.070***
	(3.59)	(3.65)	(3.62)
F value	4.06	1.51	0.18
Prob>F	0.045	0.221	0.672
Firm FE	Yes	Yes	Yes
Location*year FE	Yes	Yes	Yes
Observations	2,768	2,768	2,768
Adj. R-squared	0.688	0.687	0.687